

SCHEDULE 13G

Amendment No. 6
Arch Coal Incorporated
Common Stock
Cusip #039380100

Cusip #039380100
Item 1: Reporting Person - FMR Corp.
Item 4: Delaware
Item 5: 962,048
Item 6: 0
Item 7: 16,795,026
Item 8: 0
Item 9: 16,795,026
Item 11: 11.827%
Item 12: HC

Cusip #039380100
Item 1: Reporting Person - Edward C. Johnson 3d
Item 4: United States of America
Item 5: 0
Item 6: 0
Item 7: 16,795,026
Item 8: 0
Item 9: 16,795,026
Item 11: 11.827%
Item 12: IN

SCHEDULE 13G - TO BE INCLUDED IN
STATEMENTS
FILED PURSUANT TO RULE 13d-1(b) or 13d-2(b)

Item 1(a). Name of Issuer:
Arch Coal Incorporated

Item 1(b). Name of Issuer's Principal Executive Offices:
City Place One Suite 300
Arch Mineral Corp
St. Louis, MO 63141

Item 2(a). Name of Person Filing:
FMR Corp.

Item 2(b). Address or Principal Business Office or, if None,
Residence:
82 Devonshire Street, Boston,
Massachusetts 02109

Item 2(c). Citizenship:
Not applicable

Item 2(d). Title of Class of Securities:
Common Stock

Item 2(e). CUSIP Number:
039380100

Item 3. This statement is filed pursuant to Rule 13d-1(b) or 13d-2(b) and the person filing, FMR Corp., is a parent holding company in accordance with Section 240.13d-1(b) (ii) (G). (Note: See Item 7).

Item 4. Ownership

- (a) Amount Beneficially Owned: 16,795,026
- (b) Percent of Class: 11.827%
- (c) Number of shares as to which such person has:
 - (i) sole power to vote or to direct the vote: 962,048
 - (ii) shared power to vote or to direct the vote: 0
 - (iii) sole power to dispose or to direct the disposition of: 16,795,026
 - (iv) shared power to dispose or to direct the disposition of: 0

Item 5. Ownership of Five Percent or Less of a Class.

Not applicable.

Item 6. Ownership of More than Five Percent on Behalf of Another Person.

Various persons have the right to receive or the power to direct the receipt of dividends from, or the proceeds from the sale of, the Common Stock of Arch Coal Incorporated. The interest of one person, Magellan Fund, an investment company registered under the Investment Company Act of 1940, in the Common Stock of Arch Coal Incorporated, amounted to 9,652,548 shares or 6.797% of the total outstanding Common Stock at December 31, 2006.

Item 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on By the Parent Holding Company.

See attached Exhibit A.

Item 8. Identification and Classification of Members of the Group.

Not applicable. See attached Exhibit A.

Item 9. Notice of Dissolution of Group.

Not applicable.

Item 10. Certification.

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were acquired in the ordinary course of business and were not acquired for the purpose of and do not have the effect of changing or influencing the control of the issuer of such securities and were not acquired in connection with or as a participant in any transaction having such purpose or effect.

Signature

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

February 14, 2007
Date

/s/Eric D. Roiter
Signature

Eric D, Roiter
Duly authorized under Power of Attorney
dated December 30, 1997 by and on behalf of FMR Corp. and
its direct and indirect subsidiaries

Pursuant to the instructions in Item 7 of Schedule 13G, Fidelity Management & Research Company ("Fidelity"), 82 Devonshire Street, Boston, Massachusetts 02109, a wholly-owned subsidiary of FMR Corp. and an investment adviser registered under Section 203 of the Investment Advisers Act of 1940, is the beneficial owner of 15,979,548 shares or 11.253% of the Common Stock outstanding of Arch Coal Incorporated ("the Company") as a result of acting as investment adviser to various investment companies registered under Section 8 of the Investment Company Act of 1940.

The ownership of one investment company, Magellan Fund, amounted to 9,652,548 shares or 6.797% of the Common Stock outstanding. Magellan Fund has its principal business office at 82 Devonshire Street, Boston, Massachusetts 02109.

Edward C. Johnson 3d and FMR Corp., through its control of Fidelity, and the funds each has sole power to dispose of the 15,979,548 shares owned by the Funds.

Members of the family of Edward C. Johnson 3d, Chairman of FMR Corp., are the predominant owners, directly or through trusts, of Series B shares of common stock of FMR Corp., representing 49% of the voting power of FMR Corp. The Johnson family group and all other Series B shareholders have entered into a shareholders' voting agreement under which all Series B shares will be voted in accordance with the majority vote of Series B shares. Accordingly, through their ownership of voting common stock and the execution of the shareholders' voting agreement, members of the Johnson family may be deemed, under the Investment Company Act of 1940, to form a controlling group with respect to FMR Corp.

Neither FMR Corp. nor Edward C. Johnson 3d, Chairman of FMR Corp., has the sole power to vote or direct the voting of the shares owned directly by the Fidelity Funds, which power resides with the Funds' Boards of Trustees. Fidelity carries out the voting of the shares under written guidelines established by the Funds' Boards of Trustees.

Strategic Advisers, Inc., 82 Devonshire Street, Boston, MA 02109, a wholly-owned subsidiary of FMR Corp. and an investment adviser registered under Section 203 of the Investment Advisers Act of 1940, provides investment advisory services to individuals. As such, FMR Corp.'s beneficial ownership includes 78 shares, or 0.000%, of the Common Stock outstanding of Arch Coal Incorporated, beneficially owned through Strategic Advisers, Inc.

Fidelity International Limited ("FIL"), Pembroke Hall, 42 Crow Lane, Hamilton, Bermuda, and various foreign-based subsidiaries provide investment advisory and management services to a number of non-U.S. investment companies and certain institutional investors. FIL, which is a qualified institution under section 240.13d-1(b)(1) pursuant to an SEC No-Action letter dated October 5, 2000, is the beneficial owner of 815,400 shares or 0.574% of the Common Stock outstanding of the Company.

Partnerships controlled predominantly by members of the family of Edward C. Johnson 3d, Chairman of FMR Corp. and FIL, or trusts for their benefit, own shares of FIL voting stock with the right to cast approximately 47% of the total votes which may be cast by all holders of FIL voting stock. FMR Corp. and FIL are separate and independent corporate entities, and their Boards of Directors are generally composed of different individuals.

FMR Corp. and FIL are of the view that they are not acting as a "group" for purposes of Section 13(d) under the Securities Exchange Act of 1934 (the "1934" Act) and that they are not otherwise required to attribute to each other the "beneficial ownership" of securities "beneficially owned" by the other corporation within the meaning of Rule 13d-3 promulgated under the 1934 Act. Therefore, they are of the

view that the shares held by the other corporation need not be aggregated for purposes of Section 13(d). However, FMR Corp. is making this filing on a voluntary basis as if all of the shares are beneficially owned by FMR Corp. and FIL on a joint basis.

FIL has sole dispositive power over 815,400 shares owned by the International Funds. FIL has sole power to vote or direct the voting of 808,000 shares and no power to vote or direct the voting of 7,400 shares of Common Stock held by the International Funds as reported above.

SCHEDULE 13G - TO BE INCLUDED IN STATEMENTS

FILED PURSUANT TO RULE 13d-1(b) or 13d-2(b)
RULE 13d-1(f)(1) AGREEMENT

The undersigned persons, on February 14, 2007, agree and consent to the joint filing on their behalf of this Schedule 13G in connection with their beneficial ownership of the Common Stock of Arch Coal Incorporated at December 31, 2006.

FMR Corp.

By /s/ Eric D. Roiter
Eric D. Roiter

Duly authorized under Power of Attorney dated December 30, 1997, by and on behalf of FMR Corp. and its direct and indirect subsidiaries

Edward C. Johnson 3d

By /s/ Eric D. Roiter
Eric D. Roiter

Duly authorized under Power of Attorney dated December 30, 1997, by and on behalf of Edward C. Johnson
3d

Fidelity Management & Research Company

By /s/ Eric D. Roiter
Eric D. Roiter

Senior V.P. and General Counsel

Magellan Fund

By /s/ Eric D. Roiter
Eric D. Roiter

Secretary